SYSTEM, METHOD, AND COMPUTER PROGRAM FOR FLOW CONTROL IN A DISTRIBUTED BROADCAST-ROUTE NETWORK WITH RELIABLE TRANSPORT LINKS

ABSTRACT

The invention provides improved data or other information flow control over a distributed computing or information storage/retrieval network. The flow, movement, or migration of information is controlled to minimize the data transfer latency and to prevent overloads. A first or outgoing flow control block and procedure controls the outgoing flow of data (both requests and responses) on the network connection and makes sure that no data is sent before the previous portions of data are received by a network peer in order to minimize the connection latency. A second or Q-algorithm block and procedure controls the stream of the requests arriving on the connection and decides which of them should be broadcast to the neighbors. Its goal is to make sure that the responses to these requests would not overload the outgoing bandwidth of this connection. A third or fairness block makes sure that the connection is not monopolized by any of the logical request/response streams from the other connections. It allows to multiplex the logical streams on the connection, making sure that every stream has its own fair share of the connection bandwidth regardless of how much data are the other streams capable of sending. These blocks and the functionality they provide may be used separately or in conjunction with each other. As the inventive method, procedures, and algorithms may advantageously be implemented as computer programs, such as computer programs in the form of software, firmware, or the like, the invention also advantageously provides a computer program and computer program product when stored on tangible media. Such computer programs may be executed on appropriate computer or information appliances as are known in the art, and may typically include a processor and memory couple to the processor.